

# PROSPECTOR PARK

Homeowners Association  
PO Box 680154 • Park City, UT 84068

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May 20, 2002

Jim Christiansen  
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Dear Jim:

Thank you for attending the Prospector Park Homeowners Association annual meeting on Tuesday, May 7<sup>th</sup>. Those of us who were in attendance appreciate your articulate update of events related to the issues of soils and lead.

During the discussion, we mentioned to you that we wanted to fulfill what we considered to be an obligation to inform and keep informed the homeowners in the Prospector Park area. To that point, enclosed is a draft of the document we've been developing. When it's ready for distribution, we'll include a copy of the EPA's brochure, *Lead in the Home*.

This informative pamphlet is a first step in what we perceive to be an on-going process of providing additional education and information to the residents through our Association. Our plans include discussions with the City on additional solutions, constant monitoring to keep residents informed and establishing an information center at the library to help educate residents. We envision that the pamphlet will be updated at least annually with periodic updates as new information becomes available.

Our initiative also includes meeting with local doctors and health clinics to ensure they understand the right protocols and to encourage residents to obtain blood lead testing if they are concerned with the issue.

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Mr. Jim Christiansen  
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Having an educated group of residents with a pro-active and cooperative Homeowners Association should greatly help to ease any concerns the EPA might have in this area of keeping people informed. In the past we may have been somewhat behind the learning curve but now we believe we're getting much better and adept at getting the information to the residents and in assisting the EPA, the City and the residents achieve workable solutions that balance the risk involved with the concerns to achieve the best possible solutions for all parties on a local level.

We truly appreciate the efforts expended by you and your team in this matter and look forward to any comments and suggestions you may have. That being said, we'd like to get this to our residents in the next month and therefore would appreciate your earliest response.

Sincerely,

  
Reg Leeb  
President

cc: Dana Williams  
Jeff Schoenbacher  
PPHOA Trustees

## **LEAD MANAGEMENT STRATEGIES FOR PROSPECTOR HOMEOWNERS**

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This pamphlet was developed to assist the current and prospective resident of Prospector to be aware of various lead issues and to properly manage and knowingly understand those issues.

### **Background.**

The Prospector residential area overlays ground that contains mine tailings. Mine tailings are the sandy residue from the mineral processing conducted from the extraction of lead, silver and other metals from the mines in the Park City area. Tailings are produced by grinding the metallic ore into small particles, then running the particles through various acidic extraction solutions to leach out, or remove, the metal content, a process not unlike making coffee. The tailings in the Prospector area have been "triple leached", meaning that the tailings have been processed three times to recover as much of the mineral content as possible. However, there are still various amounts of lead, silver, and other metals present in the tailings.

The Prospector area, while overlaying mine tailings, is not alone in the Park City area in having lead in the soils. Many of the soils in the Park City area exhibit high levels of lead from the former mining and smelting activities in the district, including areas surrounding former mine sites (and you can see many of the old mine dumps around town), and smelter sites. Park City is not unique either, for many of the Salt Lake residential areas (such as Sandy) have even higher levels of lead coming from old smelter sites than does Prospector. Often, the lead at those other sites is in a form that is more "bio-available" than the lead contained in the Prospector tailings, meaning that it is in a form that if ingested, is more readily absorbed into the blood stream and body tissues, and therefore poses even a higher risk of problems to the residents.

Due to the metal content and the concern about lead and the special nature of the tailings, the Prospector area is part of the Park City Soils Ordinance (more about that later), which was enacted to protect the public health from the potential exposure to the metal content of the tailings. We have been assured numerous times by the City officials, such as Toby Ross, that we do not have a health risk and the potential risk of lead poisoning from the tailings is believed to be quite low. The low risk is mainly due to the low leaching potential of the metals that remain that were not leached out in the mineral processing and the low "bio-availability" of the species of lead in the tailings. Nevertheless, it is prudent to properly manage those tailings to prevent exposure and to understand the issue for the homeowner.

In point of fact, lead contamination in residential neighborhoods can arise in a number of ways, including besides soil contamination, lead in old paint (which was banned in 1978 but still is present in many older homes and commercial buildings), lead in solder that was used in plumbing (now banned as well), lead in gasoline (now banned as well), and lead in crystal decanters, lead in certain ceramic glazings and the like and even lead dust arising from certain types of window blinds. Homeowners should be aware of all of these potential pathways to lead contamination, wherever they live. Those problems are not dependent upon socio economic

status, or geographical areas, and are a source of concern for public health officials nation-wide, including the EPA. Properly managed, it is highly unlikely that the Prospector tailings would present any greater risk to the residents than those other sources of potential lead contamination. With this brochure, you should also be receiving a copy of the EPA's pamphlet, Lead in the Home, which talks more about the risk of lead in general.

### **Lead Toxicity and Chemistry**

The potential risk to a person is determined by measuring blood lead levels, in micrograms per deciliter, or ug/dL. The overall blood lead levels in the US population has been decreasing from 12.8 to 2.8 to 2.3 ug/dL at present<sup>1</sup>. When the residents of Prospector underwent blood lead testing in the 1980's, the average blood lead level was just slightly above the US average and within statistical variations. It is expected that the blood lead levels in the Prospector area have declined with the general US population and further evaluation of that trend will be developed by Park City and PHOA acting in cooperation with the EPA and public health authorities.

Metallic lead is a very stable element as evidenced by the use of lead plumbing still in use in some areas of Europe stemming from the Roman times. Lead is a metal used in many critical industrial and consumer applications, including your car battery, your computer screen, and others. Lead can, however, pose an elevated risk of toxicity, particularly in certain chemical states, and the dangers of lead toxicity have been well documented. To constitute a risk, the lead must be ingested in one form or another into the body.

Lead in its pure metallic or alloy form is not very mobile in the environment and it is not generally "bio-available" (i.e., is not absorbed into the bloodstream).<sup>2</sup> To become mobile and bio-available, lead must first oxidize to the cation form, a rather slow process. If, however, lead is in an environment favorable for formation of certain compounds such as lead phosphate or lead sulfide, it becomes generally insoluble and not bio-available.

The most critical factor in this process is the pH of the surrounding soil. As the soil's pH becomes more acidic or more alkaline, falling below 6.5 or above 8.5, the potential for lead to dissolve and become mobile increases. The pH for Western soils is often 7 or higher, i.e., more alkaline. However, the actual pH of yard dirt may vary substantially depending on where the soil came from. Many high organic soils, especially those derived from evergreen forest areas, can exhibit low pH, or in other words, be more acidic than the soils in general. As such, the acidity may interact with the lead remaining in the tailings to make it more mobile and bio-available.

Also, another extremely important factor in lead mobility is the presence of phosphorus. Both phosphorus in its elemental form, and in the form of phosphate rock, interacts with lead to form the insoluble mineral pyromorphite, which essentially "locks up" the lead. However, the

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<sup>1</sup> Screening for Elevated Blood Lead Levels (RE9815), American Academy of Pediatrics, Pediatrics Volume 101, Number 6, June 1998 pp 1072-1078.

<sup>2</sup> Environmental Compliance and Liability for Outdoor Shooting Ranges – Potential Problems and Feasible Solutions, Stuart Z. Cohen, Ph.D., CGWP, President, Environmental & Turf Services, Inc., Wheaton, Maryland, reproduced in the Outdoor Range Source Book, National Rifle Association, page 19.

chemical reaction to form the pyromorphite material is less efficient at higher pH levels. It is desirable, then, to maintain the basic soil chemistry at a pH level around 6, with the judicious addition of phosphate rock to immobilize the lead. However, due to the potential for ground water contamination from phosphates, the Prospector Homeowners Association is not recommending application of phosphates at present, but will work with the City and others to determine if there is a good mechanism to use this potentially highly useful device.

The potential for lead to enter into ground water is also a potential concern depending on the porosity of the soils, the amount of clay and organic material in the soil, and the depth to groundwater. Clayey soils and organic material tends to trap the lead. Sandy and porous soils have a higher potential for allowing groundwater contact.<sup>3</sup>

Consequently, properly managed, with soils chemistry kept within stated parameters, the potential for lead bio-availability can be kept to an absolute minimum through pH control and the judicious application of phosphate rock. Monitoring of this is critical, but is well within the ability of the average homeowner with some simple soils tests. Often, the local Agricultural Extension office will offer advice on pH testing for the homeowner.

#### **Lead Management of Yards for the Homeowner.**

Thus, the homeowner should understand that despite the relative stability of the lead in the tailings, there is a chance for the lead to become mobile, which means it can travel up and down the soil column and enter surface or underground waters, and may in certain conditions become bio-available and pose a toxicity risk to living things. It is essential that the homeowner understand the pH issue as it relates to their yard soils. As noted, many of the forest soils, such as those containing pine needles, etc., and many of the composted soils, unless pH neutralized, can actually have a low pH and can aggravate the lead exposure risk. The point is that simply covering the tailings with low pH soils can actually aggravate the situation. Also, because many of the soils in the Park City and Salt Lake areas exhibit high lead levels from old mine and smelter sites, it is critical to understand the soil chemistry when obtaining replacement soils for landscaping, etc. Testing for pH is a relatively simple procedure and can be done by the homeowner using one of the kits available at the lawn and garden shops. Testing for lead contained in the replacement soils is more cumbersome and the Park City [contact] can help advise on those issues. Where new construction is being done, or total yard landscaping undertaken, both the lead content and the pH content of the replacement soils should be determined in advance. Further, the homeowner should strive to achieve yard plantings that thrive best in neutral pH soils, rather than pines and other evergreens that do best in more acidic soils.

Should areas of low pH be found within the yard, control of pH should be undertaken by the homeowner through the use of lime (you should use "agricultural lime, not hydrated lime") to retain a neutral or slightly high pH level. Your local lawn and garden shop can help advise as to the correct application to achieve the correct pH balance. Furthermore, one of the single most important elements for preventing lead mobility is the judicious application of phosphates. Lead phosphate compounds, which form naturally, are some of the most stable compounds known and

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<sup>3</sup> Id, page 3-8.

virtually eliminate the potential for biological uptake of the lead. However, at the same time, the addition of excessive levels of phosphates may result in surface water and/or ground water phosphate contamination. Sound homeowner management of their yards will include periodic monitoring and regulation of pH and phosphate levels to acceptable levels to minimize the potential impacts on groundwater and surface water and to limit the bio-availability and mobility of the lead compounds.

Prospector Soils Ordinance. On December 8, 1988, Park City adopted Ordinance No. 88-11, relating to landscaping and soil coverage maintenance in the Prospector area. That Ordinance was later amended and the area expanded and is now known as the Park City Soils Ordinance. Pursuant to the Ordinance, any soil having lead of 1000 ppm or greater is deemed to be mine tailings and must be covered and maintained with a minimum cover of 6" of approved topsoil (having a lead content of 200 ppm or less) and have vegetation to prevent erosion, unless the soil is covered by asphalt, concrete or permanent structures or paving material. Also, the Ordinance specifies certain actions for flower or vegetable plantings. If the vegetable or flower beds are at grade, there must be edging material and have a minimum depth of 24" of approved topsoil so that tailings are not mixed, and that depth must extend at least a foot beyond the edge of the bed. For raised beds, there must be at least 16" of approved topsoil above the 6" of approved topsoil (22" total). Shrubs and trees planted must be surrounded by approved topsoil for an area that is three times bigger than the rootball and extends 6 inches below the lowest root of the shrub at planting for shrubs and trees must have a minimum of 18" of approved topsoil around the rootball with a minimum of 12" of approved topsoil below the lowest root of the tree.

Additionally, soils testing at or above 1000 ppm of lead cannot be disposed at any location other than an approved hazardous waste facility. The Owner is responsible for dust control, and there is a procedure whereby the City will issue a Certificate of Compliance for the property at the request of the Owner. There is also a provision for enforcement of the Ordinance by the City; however, the homeowners should be aware that the weakness of the enforcement is one of the issues that the EPA has targeted.

At present, the City has issued certificates of compliance for many of the lots in Prospector. However, due to the on-going maintenance obligations in the Ordinance, the issuance of a Certificate of Compliance does not in itself mean that no further actions are required. As new owners move in, and as additional plantings or yard work is done, all homeowners should recognize the need to maintain compliance with the Ordinance on an on-going basis. The key principle in the Ordinance is to establish the adequate amount of good soil covering the tailings, and maintenance of that cover. Interested homeowners can contact the City Planning Department to determine whether or not their home has a Certificate of Compliance and if not, what are the procedures needed to obtain the same.

Special Emphasis on Children. Because of the special susceptibility of young children to lead toxicity and due to the effects of lead toxicity on development in young children, special attention has been given to lead toxicity in children. For example, there have been a number of studies showing a link between high blood lead levels and reduced cognition in children and the magnitude of the effect has been estimated as an average loss of two to three points of IQ for

blood lead levels averaging 20ug/dL compared with those averaging 10 ug/dL.<sup>4</sup> In 1991, the Centers for Disease Control statement *Preventing Lead Poisoning in Young Children*<sup>5</sup> lowered the threshold for elevated blood lead levels as those equal to or greater than 10 ug/dL and recommended various treatment procedures. The actual toxicity of lead is a function, however, of the dose, the duration of exposure and the developmental and nutritional vulnerability of the child. The recommendations by the American Academy of Pediatrics relating to the urgency and extent of follow-up depends on the blood lead level, with the first step being to obtain a confirmatory venous blood lead level. That step should be performed immediately if the initial level is > 70 ug/dL, within 48 hours if it is between 45 and 69 ug/dL; within 1 week if the result is 20 to 44 ug/dL, and within 1 month if the result is 10 to 19 ug/dL. Individualized case management, which includes a detailed medical history, nutritional assessment, physical examination, environmental investigation and hazard reduction, begins at a blood lead level of equal to or greater than 20 ug/dL.<sup>6</sup> As you may observe, it is only in the very high levels of blood lead content that immediate intervention is warranted and those levels are not expected to even be approached from the normal Park City exposures, absent some factor unique to a particular home.

Concerned parents with young children in the Prospector area may benefit from determining the actual blood lead level content of their children by obtaining a blood lead test of their children as part of the normal physical examinations. However, the parents should understand that blood drawn by the "finger prick" method may not be reliable due to the potential for contamination and may not be adequately reflective of the actual blood lead content. For this reason, the American Academy of Pediatrics has noted that the finger prick method requires a proper collection protocol and further recommends that if a finger prick method is used and has a value exceeding 10 ug/dL, the results should be determined by blood drawn by venous methods.<sup>7</sup> The PHOA will be working with the local health clinics to help them understand the issues and procedures to be able to evaluate the lead toxicity issue for Prospector residents.<sup>8</sup>

In the unlikely circumstance that your children are determined to have an elevated blood lead level, the first thing to do is consult your physician about any potential health effects and what additional steps may be needed for monitoring your child and reducing the exposure. The next thing that should be done is to do an assessment of your own home and environment. Was the home built before 1978? Do your children regularly visit a house or child care facility built before 1978 that is being or has recently been renovated or remodeled? Does your child have a sibling or playmate that has lead poisoning? Are there old window blinds in the house? Have your children been in old building areas that are being renovated? Do you smoke inside the

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<sup>4</sup> Screening for Elevated Blood Lead Levels (RE9815), supra.

<sup>5</sup> Centers for Disease Control and Prevent. *Preventing Lead Poisoning in Young Children: A Statement by the Centers for Disease Control, October, 1991*. Atlanta, GA: US Dept. of Health and Human Services, 1991.

<sup>6</sup> Screening for Elevated Blood Lead Levels (RE9815), supra.

<sup>7</sup> Screening for Elevated Blood Lead Levels (RE9815), supra.

<sup>8</sup> Another concern is the laboratory procedures used to determine blood lead levels. The Center for Disease Control blood lead proficiency program for laboratories allows an error of plus or minus 4 ug/dL. Screening for Elevated Blood Lead Levels (RE9815), supra.

house? Do you make bullets or lead sinkers for fishing in your house? Are your children taking apart old flashlight batteries? Are your children playing with lead sinkers and putting their hands in their mouth? Do you burn candles with metal wicks? Are you using ceramic cookware or dishes that may be suspect? Do your children wash their hands before eating? Do you have a soils certification for your yard? Have the soils been properly replaced in new plantings? Have you built a sandbox and filled it with sand from an unknown source? Do you keep a clean house? All of these things may be pathways to toxicity and should be evaluated and the steps taken to correct them. All of these things, other than the soils ordinance, are also issues that can be faced by any parent anywhere in the United States.

Other Management Issues. The homeowner should understand that management of the lead tailings underneath their yards is only one aspect of proper household management to avoid lead toxicity. Other management techniques are extremely important in dealing with lead issues. There are a number of minor things that the homeowner can easily do to minimize the lead contamination problems. The homeowner should properly recycle lead batteries, including flashlight batteries and not simply dispose of them in the environment. Maintaining a clean home is essential in management of lead issues, and while probably not necessary, many people may feel more comfortable using a HEPA type vacuum cleaner in their home to prevent vacuum dust containing lead from entering the air. Avoidance of lead-coated window blinds is critical. Replacement of lead paint covered window sills is essential, and the guidelines in the attached EPA pamphlet are essential in this regard. Keeping alcoholic beverages out of lead decanters is a sensible idea. If your home has not been constructed in the last couple of years, before you use tap water for cooking or drinking, it is a good idea to let it run a few seconds first, which reduces the amount of lead that has leached out of the lead solder in your pipes. When digging in your yard, wearing gloves and washing your hands and clothes afterwards is a good idea. If you dig up the sandy residue (tailings) in planting trees, etc., you should try to carefully segregate that material and put it back in the hole first and cover it with the necessary 6" of good soil. Having your children always wash their hands prior to eating is essential.

### Summary

The Prospector area is one of the best places to live in Park City. Affordable, family friendly, close to town, close to the hiking and rail trail recreation areas, close to the schools and easy access to both the interstate and Highway 40, it is an ideal place to live and raise a family. In the past, the area has been tainted by the lead tailings issue, with much of the fear coming from the residents not fully understanding the lead tailings issue and how to best manage that. Recognizing that the danger from lead toxicity comes from many sources, and is present in even more dangerous forms than in the Prospector area, should help to put this issue in perspective. Active management by the homeowner is by far the best way of accomplishing this, with cooperation from the City government and health officials. And, as time progresses, additional knowledge will assist homeowners in understanding these issues and in dealing with them in a sound, knowledgeable manner to ensure healthy lives of the residents in our wonderful area.

The Prospector Homeowners Association welcomes your comments and suggestions as we continue to work for the betterment of our neighborhood and preservation of our property values. We believe that the educated homeowner is one of the keys to effective management of



the lead issues that have dogged Prospector in the past. We welcome your participation in this process!

## BIBLIOGRAPHY

The following sources of information are recommended for residents wishing to know more about lead. [let's see if the Park City library would devote some shelf space to this issue and we could accumulate info on it there.]

1. Screening for Elevated Blood Lead Levels (RE9815), American Academy of Pediatrics Policy Statement, Pediatrics Volume 101, Number 6, June 1998, pages 1072-1078.
2. Preventing Lead Poisoning in Young Children, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Publication date 10/01/1991.
3. Update: Blood Lead Levels -- United States, 1991-1994, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, MMWR February 21, 1997, Volume 46 No. 7.
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